

WHAT IS CLAIMED IS:

1. A method of producing an electrode for a capacitor from a foil, comprising:
 - (a) coating said foil surface with photoresist;
 - (b) applying a holographic image to said photoresist;
 - (c) removing a portion of said photoresist to expose a portion of said foil and create a pattern of photoresist on said foil; and
 - (d) etching said foil.
2. The method of claim 1, wherein said applying step further comprises: applying a holographic image to create a moth-eye pattern of photoresist.
3. The method of claim 1, wherein said foil comprises aluminum foil.
4. The method of claim 3, further comprising: polishing said foil before said coating step.
5. The method of claim 4, wherein said coating step further comprises: coating said foil surface with an anti-reflective coating and a photoresist.
6. The method of claim 5, wherein said coating step comprises: spin coating or blade coating said anti-reflective coating and said photoresist on said foil.
7. The method of claim 6, wherein said removing step comprises: removing said photoresist using a mineral acid, organic solvent or ion-etch.

8. The method of claim 7, wherein said etching step further comprises:
 - (a) placing said foil in an electrochemical bath comprising an anode portion comprising anode electrolyte and a cathode portion;
 - (b) connecting said foil to a charge source in the anode portion of said bath;
 - (c) applying a charge to said foil;
 - (d) monitoring the charge on said foil; and
 - (e) stopping said etching step when said charge reaches a predetermined level.
9. The method of claim 8, wherein said placing step comprises:
placing said foil in an electrolyte heated to about 75-90°C and comprising sodium chloride in the range from about 1-3% and sodium perchlorate or sodium persulfate in the range from about 2-5%.
10. The method of claim 1, further comprising the steps, after said removing step, of:
 - (a) applying an oxide or metallic layer onto the exposed portion of said foil;
 - (b) removing remaining photoresist to expose a portion of the foil and create a pattern of oxide or metallic layer; and
 - (c) etching said exposed foil.
11. The method of claim 10, wherein said step of applying said oxide or metallic layer comprises:
applying a layer of aluminum oxide, gold or platinum.
12. The method of claim 1, further comprising a step, after said etching step, of:
widening said foil.

13. The method of claim 1 further comprising a step, after said etching step, of:

forming said foil.

14. The method of claim 13, wherein said forming step further comprises:

- (a) forming said foil in a solution comprising citric acid;
- (b) heating said solution to a temperature in the range of about 80-100°C;
- (c) forming said foil at a current density in the range of about 10-20 mA/cm²; and
- (d) forming said foil at a voltage in the range of about 300-600 Volts.

15. A metal foil made by the method of claim 1.

16. A capacitor comprising a metal foil made by the method of claim 1.

17. An implantable cardioverter defibrillator comprising a capacitor that comprises a metal foil made by the method of claim 1.